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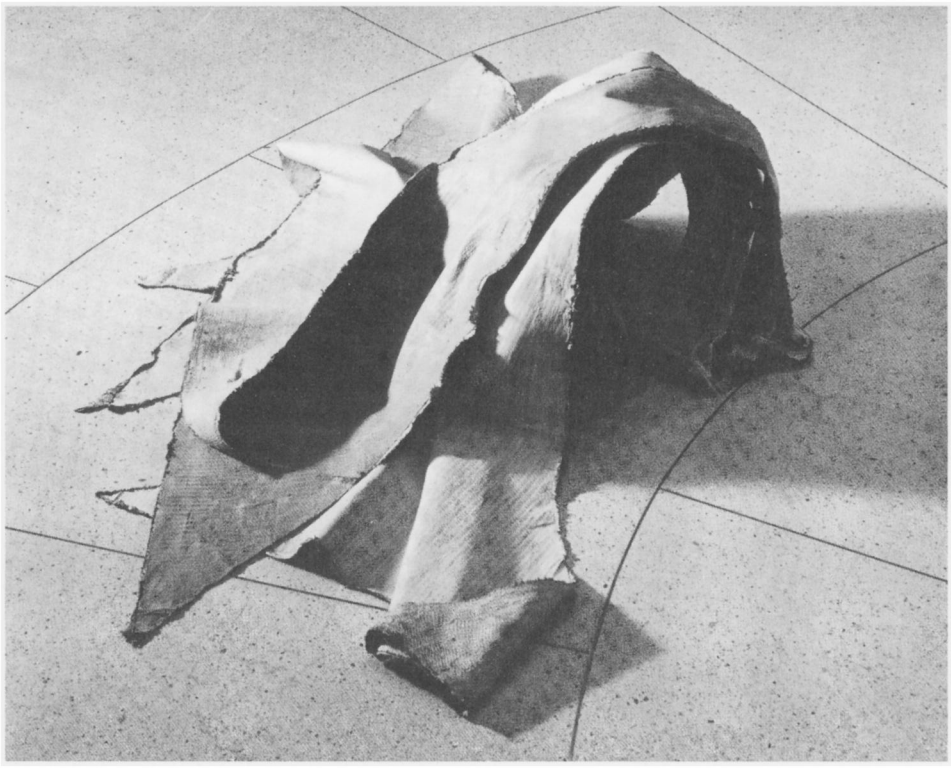

Bruce Nauman, *Untitled*, 1965–1966. Latex on burlap, dimensions variable. Whitney Museum of American Art, New York. © 2006 Bruce Nauman / Artists Rights Society (ARS), New York.

Topological Pathways of Post-Minimalism

ERIC DE BRUYN

Preamble

When Dan Graham first encountered Bruce Nauman's pliable pieces made from sheets of latex rubber in 1968, he quickly realized the need for a descriptive vocabulary other than the volumetric terms of formal analysis generally applied to sculpture.[1] Graham was drawn to one work in particular. Placed on the floor and approximately knee-high, the rubber sheet was folded back on itself and then lifted in the middle to create a self-supporting, arched structure. The informal arrangement of the flexible material registered its handling by the artist while slowly deforming under the force of gravity. Less a molded object than a modulated surface, this work has no fixed contours, no definite relation of parts to whole. What Graham experienced was a dynamic field of opposing forces that was conducive to a constant process of spatial warp rather than an objective space conceived as an empty continuum populated by sculptural volumes of a fixed contour and shape. A different geometry was needed to map this multidirectional, intensive experience of space, and thus Graham decided to introduce the notion of topology into art criticism:

> In place of the rigid notion of Euclidean geometry (as in "Minimal" sculpture), [this work] transform[s] the medium (rubber) as it (the medium) acts as a medium conveying its material in-formation. . . . [T]he continuous transformation of image in such "rubber-sheet" geometry correlates with the spectator's act of apprehension of the material object via eye and body movements as the spectator's visual [field] (itself in the process of alteration, although usually at a much slower rate of change) itself shifts in a topology of expansion, contraction, or skew.[2]

This comment can be found in Graham's seminal essay "Subject Matter" (1969), in which the artist/critic develops an insightful analysis of the transition from the static "architecture" of minimalism to the process-based work of, among others, Bruce Nauman, Richard Serra, and Lee Lozano. In his article, Graham provides detailed, eyewitness accounts of various activities and performances undertaken by these artists, and his densely worded observations

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manage to capture the manner in which the viewer is folded into a sensory web of shifting relations among images, sounds, bodies, and locations.[3] "Subject Matter" not only deploys the term *topology* as a descriptive means but comes to embody the topological "process of alteration" within the dispersive structure of the text as such. Contingent upon the situation transforming before its eyes, the authorial viewpoint is always immanent to the field of observation, avoiding any illusion of perspectival oversight. Graham "flexes/reflexes" his language in the same manner that the performances of Nauman manipulate the artist's body in reciprocal relation to its environment. Indeed, Graham's mantra in "Subject Matter" becomes "we are composing the composition," and the text itself functions, as it were, as a model of topological space, a dense web of impressions, comments, references, and quotes in which both writer and reader become enveloped.[4]

Take, for instance, Graham's portrayal of Nauman's performance *Bouncing in a Corner,* which he attended during the Whitney Museum's *Anti-Illusion* exhibition of 1969. In this piece, three performers used the walls of the museum as a kind of musical instrument or sounding board by dropping their backs against the wall. It was not possible, however, on entering the performance space to see all three members of the performance group at once. Hearing a "discrepancy in the beats," Graham decided to move around the room, and only then did he discover the presence of a third performer. In his attempt to describe the transitive quality of this auditory environment, even his syntax begins to disintegrate:[5]

> Everybody is shifting in relation to the kinaesthetic, visual, aural, and informational totality of the process . . . instead of activating and playing upon the audience's collective or individual tensions, the audience shifts attention as they and the players shift the tensions of their muscular framework . . . there is no inside or outside to the sound-space or in its relation to the instrumentality . . . shifting time of performance shifting—shifting the time of the collective relations.[6]

Passing to the limit, Nauman's performances gradually give way to a kind of smoothed space, which no longer possesses the metric properties of a Euclidean geometry but the intensive and directional qualities of a vectorial field.[7] In such a topological space no fixed boundaries and no central position of focus are available to the observer. As Graham writes, the observer has become in-formed by a transformational *field* of sensory and semantic relations. The space does not contain the performance; rather it is the performance that constitutes the space: "Everybody is shifting in relation to the kinaesthetic, visual, aural, and informational totality of the process."

Two inferences can be drawn from this brief examination of Graham's text, the first of a methodical nature and the second concerning the historical framework of my argument. Topology represents more than just a descriptive category for Graham; it operates as a *strategic* procedure within Graham's artistic practice, or, as he prefers to say, it functions as critical *model.* This topological model is not limited to a transgression of minimalism's "rigid notion of Euclidean geometry."[8] Graham's topological models would proliferate through his various activities as artist and writer after 1969.[9] However, we should not confuse Graham's procedure with a form of scientism. He is not simply illustrating a mathematical concept. So what exactly is topology a model *of?* Graham's tactic is to adopt "found structures" or what he calls social-psychological models of thought that emerge within the popular literature on the sciences. On the one hand, his appropriation of such theoretical structures allows him to critique the autonomous status of art in an oblique fashion, but on the other hand these "scientific" models were to remain critical of themselves, disposable theories, as it were, that possessed the quality of a media cliché. Topology provided Graham with such a theoretical model because, according to the artist, it formed the "dominant mathematical metaphor" of the 1960s and 1970s.[10]

Graham had excellent reasons to make this judgment. During the 1950s and 1960s, mathematical systems of analysis were frequently introduced into the social sciences in order to ground those disciplines on the universal principles of logic.[11] But the critical fortunes of such a *mathesis universalis* within the humanities is not our actual topic. Following Graham's example, I am not interested in the truth claims that are attached to topological models of thought but in the various language games that were played with these models in the intersecting fields of the social sciences and postminimal art. Tracing the multiple and often contradictory functions of topology upon the discursive stage of ideological representation requires the negotiation of a heterogeneous array of theoretical discourses, which include phenomenology, structural anthropology, urbanism, group psychology, cybernetics, and information theory. In short, I will be concerned with the *historicity* of the term *topology,* not its *scientificity.*

My method of approach owes a debt to Graham, but our critical and historical positions clearly do not coincide. My focus, therefore, will not be limited to Graham's written or artistic practice. Instead I shall cast my gaze wider, over the multiple operations of a "topological model of thought" within the institutional and discursive terrain of the 1960s. In assuming this broader perspective, I shall nevertheless hew closely to two fundamental aspects of Graham's conception of the model; namely that it has both an abstract nature and a material existence. Topology was a pervasive "metaphor" in the social sciences during the 1960s, but it also had its concrete

applications on the level of technical apparatuses and social institutions. The models of topology, which Graham appropriates from cybernetics, systems theory, and group psychology, constitute theoretical (and often utopian) diagrams of social relations, which, however, also lend themselves to a concrete mode of actualization. To put it differently, the topological models are not just conceptual in nature but operate on a kind of micropolitical level. They have an experimental nature in a communal sense, which enables the involvement of real subjects within a "shifting time of collective relations," as Graham stated in "Subject Matter."

What is significant is this material level of the performative event of topology, not the theoretical rigor with which the concept of topology is applied by Graham. Accordingly, my own references to topological geometry do not hold any claim to scientific exactitude. In keeping with Graham's strategy, a layman's definition of topology will, for the most part, prove sufficient. All that is needed to bring the reader up to speed is a brief look at the lemma in *The Columbia Encyclopedia* that states that topology is

> concerned with those properties of geometric figures that are invariant under continuous transformations. A continuous transformation . . . is a one-to-one correspondence between the points of one figure and the points of another figure such that points that are arbitrarily close on one figure are transformed into points that are also arbitrarily close on the other figure.

Hence, two figures are said to be topologically equivalent if one can be deformed into the other "by bending, stretching, twisting, and the like, but not by tearing or cutting."[12] Hence the popular name "rubber sheet geometry" that is given to topology and which Graham put to such good use in his description of Nauman's latex rubber objects.

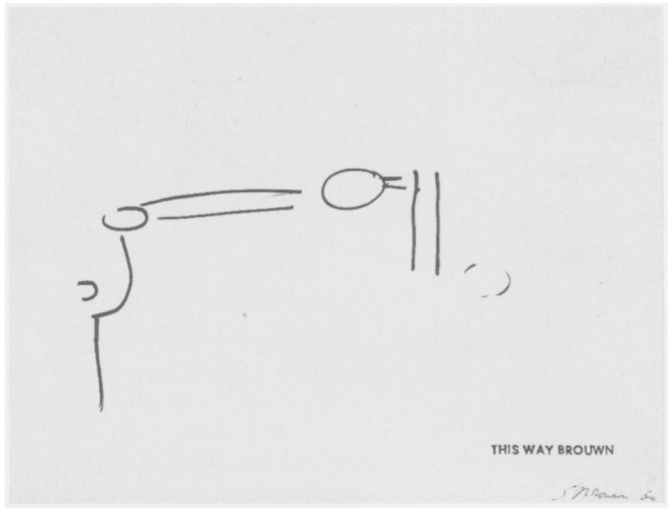
A topological space can be explored by legwork alone.[13] In the following, I wish to examine two art practices that lend themselves to such an ambulatory mode of discovery. My first example consists of an ensemble of drawings by the Dutch artist Stanley Brouwn called *This Way Brouwn* and dating from the early 1960s. These drawings represent the mobile itineraries of pedestrians within an urban space, and a close reading of *This Way Brouwn* in relation to various discursive models of topology will draw out the historical contradictions upon which Graham's topological turn was to pivot. My second example is derived from Graham's work. I will first examine his magazine pieces in which the topological model is initially elaborated and second consider his video performances and installations of the mid-seventies, which apply the topological procedures of time delay and feedback. In these perfor-

mances and installations the artist deploys closed-circuit video systems in order to create an immersive situation of shifting intersubjective relations.

Ultimately, however, more than just a set of historical questions confronts us: What are the discursive functions of topology? Where and how was topology deployed as an artistic model? My central question is of a genealogical nature; namely, what critical relevance does this history of the topological pathways of postminimalism yield for us today?[14] What might be at stake in this history is signaled, once more, in Graham's essay "Subject Matter." In this text, the artist/critic makes a constant verbal play on the difference between *information* and *in-formation*. The former refers to a static organization of space, filled with quantifiable data, while the latter term connotes a process of spatial and semantic dispersion. Or, to put it in slightly different terms, *information* is attached to a stratified notion of space, whereas *in-formation* is connected with a smooth, deterritorialized space of drifting signs and bodies. The topological model of postminimal art, therefore, runs at an oblique angle to the institutional frameworks of modernism. We are reminded of Michel Foucault's observation: "Just as the network of power relations ends by forming a dense web that passes through apparatuses and institutions, without being exactly localized in them, so too the swarm of points of resistance traverses social stratifications and individual unities."[15] Seen in this light, it becomes evident that Graham's *in*-formational procedure seeks out the intervals between the dominant formations of knowledge, and this immanent field of in-formation is where, as Foucault would argue, new subjectivities and new effects of power come into existence. While Graham's topological space clearly transgresses the striated space of an institutional practice of art—the "Euclidean" grids of minimalism are still wedded to the containing architecture of the gallery—it stands in a more complex relationship to the smooth spaces of the newly emergent informational society. To speak with Foucault once more, we need to ask how Graham's topology of in-formation moved outside the spatial matrix of disciplinary power. But we must also inquire to what degree this very movement might have been captured, once more, within a new historical order of management and control.

This Way Brouwn

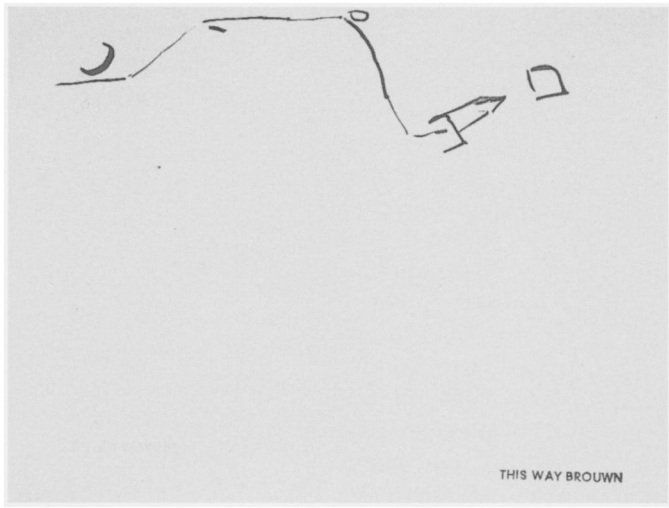
Between 1960 and 1964, Stanley Brouwn produced a curious series of drawings. They consist of no more than a few wavering lines on a set of standardized sheets of paper. Executed in a rapid manner, the sketches show little attention to issues of skill, detail, or placement. In fact, a quick comparison of the images demonstrates that they were not even drawn by the same hand. But they were all stamped in the lower-right corner with the same phrase: *This Way Brouwn*.[16]



Brouwn generated these drawings by walking up to perfect strangers in the street and asking them for directions to another location in the town. The passer-by thus became an unwitting collaborator in the creation of a work of art. Brouwn surreptitiously commissioned their sketches and appropriated them by placing his stamp on them. The artist had no intention of following the provided directions; it was the spatial graph, the sketched trajectory that resulted from this brief encounter between strangers that absorbed his attention. "When I made one for the first time, I became so fascinated, that I made thirty in one go."[17] But why should this be the case? What strange attraction was exerted by the spatial mapping of others, and why should these tracings appear so vital to Brouwn?

The drawings themselves do not provide a univocal answer to such questions. It is not sufficient, for instance, to point out how Brouwn's project parted ways with the aesthetic protocols of late modernism by negating the criteria of skill, originality, or uniqueness. The multiple meanings that are released by these drawings are not contained by their gesture of refusal, although the phrase "this way Brouwn" may also be understood in this sense; namely, as indicating a way out of the cul-de-sac of modernist abstraction. Besides this limited reading of *This Way Brouwn,* the ambivalent meaning of the series has been minimized in other ways.

In most accounts of the artist's career, *This Way Brouwn* has been granted archetypical status. The work is usually seen as the starting point of Brouwn's development into a conceptual artist. Nevertheless, the drawing series emerged within the neo-avant-garde context of Fluxus and happenings: at the time, Brouwn executed several actions in public and created multiple objects that combined the Duchampian strategy of the ready-made with an aesthetics of play and participation.[18] Furthermore, the *This Way Brouwn* drawings were surrounded by a discursive framework of statements by the artist. After 1971, however, Brouwn would largely suppress this original context of the work and downplay its more ludic values.[19] All references to Brouwn's earlier actions, objects, and texts are now occluded in his retrospective exhibitions.[20] However, not only were the *This Way Brouwn* drawings to survive, but they became the centerpiece of his newfound artistic identity. Typical of Brouwn's later work is the operational logic, systematic order, and deskilled nature of his so-called measurement and walk pieces that allowed the artist to be categorized as a conceptualist during the 1970s.



Opposite and above:
Stanley Brouwn.
***This Way Brouwn*, 1960.**

Brouwn's conceptual work has become known for its constant dialectic between the principles of movement and measurement. He seems to have been intent on investigating all facets of Zeno's paradox. Consisting of a largely ambulant practice of "constructed walks," Brouwn's later work conjoins and confounds the separate dimensions of a directional and a metric space. An important work in this regard is *Steps,* which was executed by Brouwn for his one-man exhibition at the Stedelijk Museum in 1971. For this piece, he counted every footstep he made while traveling from the Netherlands, through Belgium, France, Spain, Morocco, and Algeria and back again.[21] Each day he transmitted the total number of his paces to the museum. This information was then transcribed by the museum onto an index card accompanied by the corresponding coordinates of date and country. The visitors to the museum could consult the daily accumulating data, but they were not able to track his precise route across the map of Europe and Northern Africa. Brouwn's itinerary was thus reduced to an abstract line that intersects with the geopolitical grid of national boundaries. Subsequent works would multiply the devices and templates of mensuration and invent numerous, mutually inflected systems of measuring, counting, and recording the paces of the artist. Involving vast assemblages of annotated sheets of paper, index cards, and filing cabinets, this phase of the work perfectly fits the bill of what Benjamin Buchloh has described as the administrative aesthetics of conceptual art.[22]

I don't wholly disagree with the location of *This Way Brouwn* within the lineage of conceptual art. The exact position of *This Way Brouwn* within this lineage, however, is not as clear-cut as it may seem, and as a result the specific circumstances under which Brouwn produced his series threaten to be overlooked. In retrospect, the historical direction in which *This Way Brouwn* headed might seem evident, but in 1964 *This Way Brouwn* pointed only to the exit sign of the museum. The work's most immediate aim was to liberate its subject of address from the institutional confinement of the modernist practice of art. Once out the door and onto the city streets, this subject entered into a metastable force field of shifting and intersecting social networks of power. The urban street in 1964 was, of course, not a liberating, nomadic space that stood in strict contrast to the ideological enclosures of the museum, although at certain moments Brouwn was prone to suggest such a viewpoint. The city in 1964 constituted a highly dense force field that demonstrated its own complex set of transitions between striated and smooth spaces.

Within these intervals, a "swarm of points of resistance," to use Foucault's phrase again, were soon, if only briefly, to make their appearance. Foucault argues that disciplinary power does not transcend such points of resistance, controlling subjects from above, but is engendered from within the shifting matrix of social relations. Social groups give rise to strategies of power, just as the techniques of power produce subjects in turn. If disciplinary power is allowed to run its course, it will stabilize the social field and give rise to the various institutional strata of individuation, knowledge, and administration, without being confined to these institutional territories. The later, conceptual work of Brouwn might be considered to parody such disciplinary devices of subjectivation, but the earlier work occupies a far more ambivalent terrain. *This Way Brouwn* indicates the interplay of social forces, the tension between the disciplinary molds of power and the "swarm of points of resistance" in a more diffuse manner.

Brouwn's early work, presumably, was marred by a "constant hesitation with respect to authorship, or with respect to the problem random form/controlled form."[23] This is why, as some critics hold, Brouwn revised his own history and discarded many of his works and writings from the 1960s. This so-called indecisiveness of Brouwn's work, however, its oscillation between the registers of randomness and control, is symptomatic of its immanence within the fluctuating force field of its historical moment. In order to trace the multiple loopings of this terrain, I shall need to develop a somewhat circuitous route of my own, constructing a discursive context for the images that is far from homogenous. What shall emerge from this multi-accented picture of *This Way Brouwn* is that this project not only prefigures the administrative aesthetics of a later conceptualist practice but in fact inscribes more than one topology of power within itself. In short, the historical path along which it beckons is not one-directional.

Becoming Direction

At first glance, the *This Way Brouwn* drawings have a confusing appearance. We have no sure way of knowing which urban plan is represented in the images (although, infrequently, a street name might be scribbled in a corner). We can decipher only a web of intersecting lines and connecting nodes, which add up to no more than a fragmentary rendering of the urban network of streets and squares. We can't tell for sure, but some of these drawings might actually contain the same set of directions even though they seem to bear little formal similarity. What we perceive, in other words, is a kind of mental image of an individual's intuitive grasp of the city environment, but this mental representation of urban space is prone to all kinds of deformation and augmentation. These cognitive

maps picture the pathways between urban locales, irrespective of the actual physical distance that separates them or their relative position in a geographical sense. In contrast to the gridded, metrical scale of the topographical map, these drawings portray the urban environment as a vectorial field of direction and movement. In short, the *This Way Brouwn* series depicts a topological, rather than a Euclidean conception of space.

Topology is a kind of math in motion; it focuses on relationships of juxtaposition, proximity, and envelopment, but also on the possible ways of traversing the edges or moving between points within the complex spatial figures of grids and networks. The topologist, therefore, may be compared to a voyager. Or rather, as some math books propose, the topologist is like a traveler on a strange road. Not unlike Brouwn, the topologist will typically inquire "which way do I take to get there?" rather than asking "how long?" or "how far?"[24] Indeed topology was originally called *Analysis Situs* by the Swiss mathematician Leonhard Euler in 1753, when he presented his solution to the famous puzzle of the seven Königsberg bridges: "Is it possible to cross all bridges without re-crossing any one of them?" What this example clarifies is that within topological analysis only the possible links between locations are important and not the measurement of physical distance. Or, as the mathematician Henri Poincaré pointed out, the propositions of topology "would remain true if the figures were copied by an inexpert draftsman who should grossly change all the proportions and replace the straight lines by lines more or less sinuous."[25] The badly copied figures may look completely different from the standpoint of Euclidean geometry, but from the standpoint of topology they are perfectly isomorphic; that is, they describe the same structural relations between points in space.

The sketches stamped *This Way Brouwn* are comparable to those of Poincaré's unskilled draftsman. Some of these drawings might actually contain the same set of directions even though they seem to bear little formal similarity. To the casual viewer, the territory and routes that are delineated in these elementary sketches will hardly be intelligible, because they lack the necessary indications of location, scale, and distance. The fascination that these drawings may exert on the viewer does not result from any display of technical facility or topographical accuracy. The *This Way Brouwn* images are compelling, rather, in their suggestion of a more intuitive grasp of actual space. They delineate a directional field of bodily movement within the habitual environment of the city, and in this capacity the drawings indicate but do not fully figure a more intensive mode of spatial experience than the rectilinear grid of a map ever could.

Brouwn was enthralled by the drawings. In his imagination, the *This Way Brouwn* project would expand to almost infinite

proportions: "Stanley Brouwn is standing somewhere on earth. He asks a random pedestrian to show on paper the way to another point in the city. The next pedestrian shows him the way. The 24th, the 11,000th pedestrian shows him the way. This way Brouwn."[26] Perhaps *This Way Brouwn* appeared to promise such an inexhaustible source of possibilities because Brouwn believed that he had tapped into a spontaneous mode of perception that circumvented more codified modes of seeing: "A *This way Brouwn* is produced in the time it takes for the pedestrian to give his explanation. No second thoughts, no polishing and touching up the result."[27] Brouwn seemed, almost accidentally, to have stumbled onto the solution of the time-worn enigma of modern aesthetics: wherein lies the wellspring of visuality? In modernist painting this question was answered by reducing the beholder to a punctiform subject, who could absorb the whole visual field of the work of art in the twinkling of an eye. But this modernist revolution of perception already rang hollow by the mid-sixties; its jettisoning of the evidence of the body and the social no longer appeared tenable. *This Way Brouwn* clearly gestured in another direction. In these drawings, the spatial contours of the world are wavering and fluctuating, not yet subjugated to the inflexible grid of distance and measurement. This unfixed nature of the drawings, implying through a few sparse lines the richness of an inwardly lived experience, possibly appeared to Brouwn as the marvelous imprint of a self-constitutional act of perception. According to this perspective, *This Way Brouwn* was born of a chiasmic intertwining of an embodied self and the everyday world it inhabits—a mutual envelopment of body and world, moreover, that comes *before* contemplative thought and its coordinated set of projective and metric geometries: the roads, streets, and squares, if you will, of the rational mind. The criteria of arbitrary selection and anonymous origin that adhered to *This Way Brouwn* allowed Brouwn, perhaps not without irony, to stake his claim to this plane of immanence. He insinuated himself, as it were, into the spatial imaginary of the other in order to assume the rights of ownership, despite the implausible nature of this act in reality:

> The fleet of streets, squares, lanes, etc. is sinking deeper and deeper in a network of *This way Brouwns*. All direction is being drained from it. They are leading nowhere. They are already involved, captured in my work. I am concentrating the directions of all possible ways in my work. I am the only way, the only direction. I have become direction.[28]

The *This Way Brouwn* series lends itself to a phenomenological reading. In particular, Maurice Merleau-Ponty's unfinished *Visible and Invisible* contains some conjectures that are pertinent to the present context. Whether Brouwn was familiar with the writings of

Merleau-Ponty is immaterial to the purpose here. Of interest is the historical synchronicity of *This Way Brouwn* and *Visible and Invisible.* Both works show a similar interest in a return to perceptual immediacy that may be described in topological, rather than projective terms. This same return, however, is historically determined in a complex way, and a phenomenological model of topology will provide only a starting point for my discussion.

Visible and Invisible consists of a set of fragmentary notes that were edited posthumously. In reading them, we can follow the pathways of Merleau-Ponty's thought in its continuously frustrated attempt to near the source of perceptual experience. The true nature of perception will necessarily mask itself before his speculative gaze, as Merleau-Ponty understood only too well, otherwise its authenticity could be called into doubt. Nevertheless, in a vain attempt to shed the blanket of perceptual habit, Merleau-Ponty sets himself the task of revealing the polymorphic nature of vision before it is reduced to a conscious *act* of perception and to the rationalized systems of Euclidean or projective geometry.[29] While the visible, he writes, is *informed* by culture—Renaissance perspective being but one of his examples—Merleau-Ponty desires to "remember" what preceded this cultural organization of perception and to accede to the "invisible" root of visuality.

Following Merleau-Ponty, one might contend that Brouwn's drawings manifest the traces of a "brute" or "wild" mode of perception that is not yet determined by the learned skills of projective or Euclidean geometry. "Replace the notions of concepts, idea, mind, representation," Merleau-Ponty advises, "with the notions of dimensions, articulation, level, hinges, pivots, configurations."[30] Only then may we discover the primordial, "non-perspectival image of being that . . . is at the same time older than everything and 'of the first day.'"[31] To this foundational dimension of being, Merleau-Ponty gave the name "topology."[32] Surely it is intriguing to consider Brouwn's drawings from such a phenomenological viewpoint, as working both backward in time and as moving outside of history. According to such an account, *This Way Brouwn* would appear to wipe the slate of art history clean through its discovery of a primordial terrain of visuality that still remained to be colonized. Or so it may have seemed in 1964.

Merleau-Ponty's proposition of a "wild" mode of perception was utopian in nature. His notion of a primordial topology of visual experience must be placed against the historical horizon of the increasingly commodified reality of everyday life. This horizon remains for the most part indistinct on the pages of his text. From a distance, the "roar of the great city" may penetrate Merleau-Ponty's thoughts, but only as a metaphor of the a priori envelopment of consciousness within the carnal folds of the body's *habitus.* This

immersion of the phenomenological subject within the directional space of the lived body is a far cry from the standardized milieu of late capitalist society. Merleau-Ponty retrojects his utopian desire into our (ontogenetic) past: at some point during our passage into adulthood, we have fallen from grace. We have falsely come to accept, he complains, the derivative logic of Euclidean space as the universal norm of perception (and along with this acquiescence, structuralism would subsequently state, we have internalized certain rationalist patterns of behavior as a social norm of identity). *This Way Brouwn,* in turn, projects its own model of corporeal freedom, yet it is oriented in another temporal direction; it is projected forward and not backward in time. Brouwn did not find his utopian ideal reflected in the darkened mirror of historical loss. He did not mourn, as Merleau-Ponty did, the degradation of lived experience in the present. Instead, Brouwn's vision of corporeal liberation took a more futuristic appearance:

> When millions of years from now the earth has become empty and bare again, my work will form the only existing sign and the only intelligible language. Pure movement in space, movement for the sake of movement, movement in its immeasurable power, such as we only know from outer space. The movement of planets, stars, suns, moons, etc. I want to feel like the first man on the moon will [!] feel. Every blood cell, every muscle, every cell of the body conquers space, enters space.[33]

The visionary tone of such statements is familiar enough from the tradition of avant-garde manifestoes. Yet the conflicted nature of its imagery is striking. Despite the energetic vision of Brouwn's cells swarming across the universe, this passage is punctuated by a bleak undertone. Brouwn's utopia exists only in a heavily adulterated form.

Brouwn certainly had good reasons to excise such fabulations from his official record in the 1970s. The turgid prose of these manifestos would already have sounded outmoded by the mid-1960s. One needs only to compare its declamatory tone to the crisp, matter-of-fact style of writing busied by the minimalists, for instance. Nevertheless, the jumbled sci-fi imagery of these writings, which combine the themes of movement, conquest, and barrenness, is symptomatic of the historical conditions that determined the production of *This Way Brouwn.* At times apocalyptic, at times millenarianist in tone, Brouwn's statements of the early 1960s consistently unfold the vision of a future world in which science, technology, and the social have become fully integrated and the human subject as a consequence has undergone an ecstatic form of dispersion that is more radical than anything imagined by phenomenology:

> 4.000 A.D. / When science and art are entirely melted together into something new / When the people will have lost their remembrance and thus will have no past, only future. / When they will have to discover everything / every moment again and again / When they will have lost their need for contact with others. . . . [Then] movement will be free.[34]

Hailing in the Street

The topology of distortion, augmentation, and contraction in the *This Way Brouwn* series represent the lived reality of the urban milieu. But are these drawings purely a deposit of a "wild" model of being? Did the enunciative situation of the drawings—the encounter in the street—take place outside an ideological order of communication? Clearly not. They are drawings of a social space, after all, even if the images don't always name the city streets or monuments they refer to. And despite this paucity of information, the images form the product of a particular, discursive event. Let us not forget that the drawings are stamped with the exhortative phrase: *This Way Brouwn.*

What event has been staged by *This Way Brouwn*? An individual is hailed. He is beckoned to come this way. This subject of address is, at first, the anonymous pedestrian. Brouwn submits a request: "please show me the way." But subsequently a slippage occurs between the position of self and other, sender and receiver. Brouwn now becomes the recipient of the message, assumes the place of addressee. Brouwn is shown the way by a stranger. He is enjoined to enter the space of the other in which multiple voices begin to speak as one: "Five hundred, a thousand or more people are gathered together in a city somewhere. At the same moment they all start to explain to Brouwn how to get to their house from that location. As loud as possible! This way Brouwn."[35] Brouwn has become stamped out as the subject of interpellation.[36] So from the phenomenological model of a natural space, we proceed to an *ideological* scenario of spatialized subjects. What these drawings map is not only the city space but the manner in which the beckoned subject is inserted into the symbolic apparatus of ideology: "People talk while sketching their explorations, and sometimes they talk more than they draw. On the sketches we can see what people explained. But we cannot see whatever they omitted having some difficulty to realize that what they take for granted needs to be explained."[37] What is left unsaid, what indeed *must* escape awareness in this encounter, is the very process of subjectification itself. The individual, as Louis Althusser would state, is always already located as a subject within the social structures of ideology. The oddity of Brouwn's procedure, however, is that he signs his name in the place of the other. He

usurps the other's position: he is both the one hailed and the one doing the hailing. This leads to two contradictory fantasies on the part of Brouwn: either he sees himself becoming the center of the universe, or he constitutes a black hole into which the universe disappears. By signing his name to the drawings he fictively becomes the central node within an intersubjective web of exchange: "I am the only way, the only direction. I have become direction."[38] Alternatively, if this nodal point only loops back on itself, it will cause the annihilation of the space-time fabric: "B. is standing on the Place de la Concorde. He addresses a passerby and asks for the Place de la Concorde. No way Brouwn. . . . All roads, streets, places, etc. assembled in one point. No way Brouwn. The universe has disappeared!"[39] The drawing series gives rise to two wildly divergent accounts: either the totalization of reality, with Brouwn as its central hub, or a complete vanishing of the world. Both accounts, however, are but complementary aspects of the artist's impossible attempt to place himself somehow beyond or outside the symbolic order.

On the one hand, then, these drawings create the mise-en-scène for a deterritorialization of artistic practice, but, on the other hand, quite *possibly,* a new mode of reterritorialization, an ideological repositioning of the subject, is set in motion. *Possibly* because the meaning of this event is not immediately clear. To many observers in the sixties the urban environment seemed to be becoming more and more inhospitable and opaque to its inhabitants. Something, apparently, had come to block the seeming transparency of the social environment. This disturbance in the relationship of subjects to their environment was often expressed in terms of an ecological crisis, but the ideological apparatus described by Althusser clearly was beginning to malfunction. Brouwn's appropriation of the topological imaginary of others bespeaks this faltering of the ideological machine. The social distribution of subject positions was not only fictively unified under his name but canceled: "The roads and streets (the brain of the universe) intersect our brain. Every point is a trap."[40] A space that is divided into fixed points is something to be distrusted, Brouwn submits, while he unconsciously slides between the registers of the spatial and the social. Such a striated space forms "a trap" of individuation, which Brouwn seeks to overcome in his imaginative (and purely imaginary) way by becoming an abstract, vectorial line that is the sum of all possible movement. The nomadic individual called Brouwn would thus become imperceptible, only to write his name large on the surface of the earth.[41] These textual operations of *This Way Brouwn* have been sufficiently demonstrated, but I have not yet addressed the concrete historical circumstances of these maneuvers by the artist. In short: What about the city in 1964?

The strange interval in *This Way Brouwn* between becoming "direction" and becoming a "trap" draws attention to a kind of

warp within the homogenous web of ideology, as if its stitching is coming undone. A similar disturbance of the subject's position within the social space has been registered in another, perhaps more famous urban study of the early sixties, Kevin Lynch's celebrated *The Image of the City* (1960). Lynch theorized the breakdown of the city dweller's ability to situate him- or herself vis-à-vis the urban totality in terms of cognitive mapping. Lynch's main example of such a disorientating space was the grid of Jersey City, New Jersey, which lacked the traditional markers, such as monuments, nodal points, natural boundaries, or built perspectives, that enable a person to mentally retain an "articulated ensemble" of relations that can be mapped and remapped "along the moments of mobile, alternative trajectories."[42] Fredric Jameson, writing about Lynch, included in this theoretical concept not only the whole urban landscape but the vast global networks of economic, financial, and population flows, which escape all conceivable means of representation. The informational network is of course a topological figure par excellence, and network theory thrives on topological models of space. Which leads me to the following consideration: perhaps that strange combination of spatial anxiety and pleasure that is manifested in the drawings of Brouwn points in yet another historical direction than either the polymorphic gaze of phenomenology or the ideological systems of structuralism?

We have come to a fork in the road. In order to pursue these questions further, I must part way with Stanley Brouwn. The preceding section attempted to show how a comparative perspective, which holds the material practice of Brouwn and the discursive field of topology in simultaneous view, may reveal the irruption of certain socioeconomic contradictions within the cultural field of representation. I have alluded to this fact by indicating the ambivalent structure of the *This Way Brouwn* project: its foregrounding of the contrasting motifs of translucency and opacity and its paradoxical mode of authorship. However, the structural imbrication of Brouwn's work within the social field has also shown itself to be a highly mediated one. The technical medium of drawing that he applies can portray only indirectly the place of the interpellated subject within his or her historical context. And by historical context I don't mean just the urban plan traced on paper, but those informational "networks" of which Jameson speaks so disparagingly in *Postmodernism, Or, The Cultural Logic of Capitalism* and which form the not-so-distant horizon of Brouwn's practice.

Rarely is the topological impulse in Brouwn's work expressed in terms of the new technologies and infrastructures of communication. A few exceptions to the rule can be cited—a proposal in 1963 for so-called *Phone Drawings* in which a figure, such as the outline of a "ship," was to be mapped onto the telecommunications network by

having an individual successively call a series of numbers; or the set of instructions he invented in 1970 for an IBM computer—and are related to the *This Way Brouwn* project.[43] (The artist also undertook a *This Way Brouwn* action in Berlin in 1964 whereby he was directed through the city to the gallery of René Block by way of a walkie-talkie.[44] Perhaps it will not come as a surprise, then, that the *This Way Brouwn* project has received renewed attention from a younger generation of new media artists who are associated with the so-called locative media movement.) But during the seventies Brouwn would only increase the distance between his own methods and the informational media. His obsessive procedures of counting and measuring his own bodily space somehow compensate for the disembodied realm of mass communication. The point I wish to make, however, is *not* that Brouwn failed to adopt a more up-to-date mode of technical production, even though the topological structure of his work implies certain links to an informatized society. If we must speak in terms of historical failure, then it is not of a technological kind but of a strategic nature. Brouwn conceives of his position vis-à-vis the changing social field of communication in a manner more imaginary than embodied. He did not develop a physical mode of intervention within the informational networks of power. For a more positively articulated, *biopolitical* model of the incorporation of bodies within the new technological circuits of symbolic exchange and communality, we need to look to the work of Dan Graham. But before I proceed, let me sum up what was at stake in my discussion of *This Way Brouwn:*

1. The conflicted relationship between topology and the grids of architectural and urban space, and, moreover, an emergent awareness in postmodernism that urban space is becoming intractable and hard to read.

2. The substitution of art as a skilled mode of practice by a participatory model of art, which, in turn, opens onto the field of communication theory and its topological figure of the network.

3. The *ideological* aspect of collaborative and communicative practices in art; in other words, their politics of control.

4. The historicity of social and psychological models of perception as they are materialized, in a mixed and contradictory fashion, within the work of art.

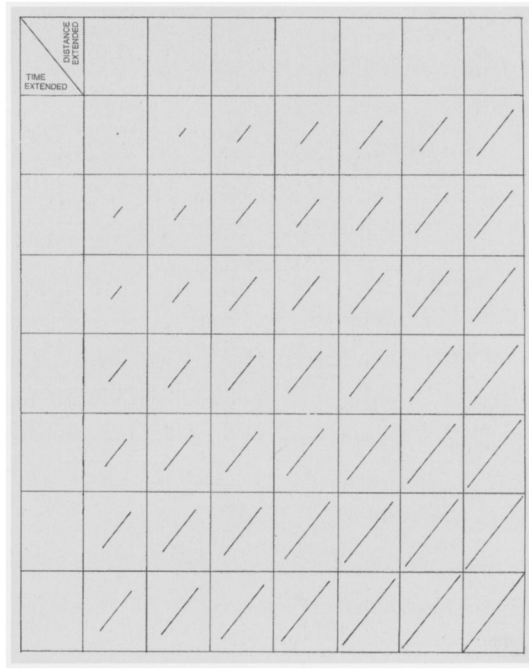
Minimal Grids, Logical Diagrams, and Information Networks

Graham, like several of his postminimal colleagues, was an avid reader of popular literature on mathematics. "Recreational mathematics" is how one of their favorite authors, Martin Gardner, called this genre, which playfully introduced a mass audience to the rigors of symbolic logic. Gardner's term also applies well to the attitude that Graham, Mel Bochner, and Robert Smithson adopted toward the

field of mathematical theory. At a recent symposium on Smithson, for instance, Bochner showed an intricate diagram out of a popular math book, which the artist had randomly chosen from his own private library. While such graphs made no particular sense to him, Bochner commented that they appeared to offer a "new world of reference points" to him and his peers during the 1960s.[45] He remembered that Smithson and he would wryly remark to each other how such graphs resembled the layout of Mallarmé's poem "Un coup de dés." Only, the mathematical graphs were better, they concluded, because their visual effect of complexity was unintentional. This proves that mathematics did not provide them with the foundation for an art of "ideas." They were in full agreement with the credo of their artistic mentor Sol LeWitt that the illustration of mathematics or philosophy was not the goal of conceptual art.[46]

The ironical use of mathematics and systems theory in postminimalism, which purported to undermine the high seriousness of modernist aesthetics, assumes visible shape in their magazine pieces, such as *Domain of the Great Bear* (1966), Smithson's *Quasi-Infinities and the Waning of Space* (1966), and Graham's *Homes for America* (1966–1967). The pages of these pieces are strewn with various tables and graphs that classify and order information but present little in the way of explanation. Constructed from blocks of text, one abutting the next, the magazine pieces consist of densely packed grids of images and words. The reader is hard-pressed to discern an underlying viewpoint behind these texts, which was exactly the artists' intention. The magazine pieces function as a kind of literary decoy, simulating the look of an essay. Their overt subject matter is a mere pretext. Of greater interest to the authors was the structuring of the text into different components or segments, each consisting of various systems of quotes, images, and graphs.

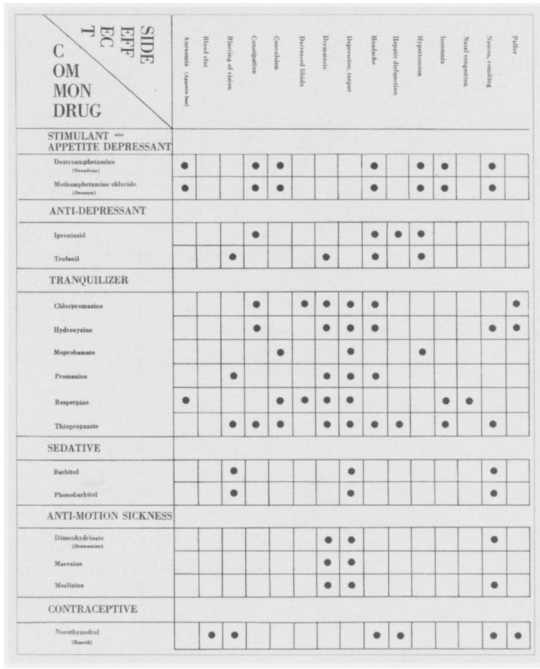
These magazine works clearly show the artists' awareness of the semiotic grids and models of structuralism. In his magazine piece *Information* (1967), for instance, Graham cites Claude Lévi-Strauss.[47] "'Content' may come from the formal structural frame whose 'differentiating features (are) of such greater importance than their content'; a system makes use of a 'pre-conceived grid in the form of a horizontal/vertical matrix [of oppositions which then] make it possible to introduce division and contrasts: a scheme of discontinuous oppositions.'"[48] True to this structuralist credo, *Information* is less about the message than about the code. Like Lévi-Strauss's own tireless exploration of the permutational relations between semantic elements, *Information* manifests Graham's pleasure in the manipulation of textual data upon the rectilinear grid of the printed page. Graham's text quotes freely from an eclectic range of sources. Besides Lévi-Strauss, Graham incorporated material on the thirteenth-century logician Ramon Lull,[49] passages from Jorge Luis



Borges's short story "The Library of Babel" and Stephane Mallarmé's essay on "Le livre, instrument spirituel," as well as lengthy quotations from Marshall McLuhan's *The Gutenberg Galaxy.* The form of Graham's text is closely modeled on the "mosaic" structure of *The Gutenberg Galaxy* but, typically, Graham is not beholden to one technique or procedure of knowledge. "My position," as Graham stated elsewhere, "is always in-between. It's structuralist anthropology and McLuhan at the same time."[50]

Information juxtaposes two logical methods of constructing a discursive order: the one transcendental in nature, the other historically grounded. On the one hand, we have the examples of Lull's ingenious, if slightly mad diagrams or Borges's infinite library, which derive the outer horizon of human knowledge from the purely mathematical combinations of a limited set of semantic terms. On the other hand, we have the example of *The Gutenberg Galaxy* in which the contours of the intelligible universe—and our place within that world—are considered to be historically determined by the material conditions of the dominant medium of social communication. Graham quotes McLuhan's well-known argument that the linear, successive order of the printed book orients the reader toward reality in the same manner as the perspectival framework of Renaissance painting; namely, it enforces a passive mode of objective detachment: "the new 'space' served to represent (or contain) the author's privileged 'insight' to the masses of individual readers."[51] But by the 1960s, McLuhan had already announced the obsolescence of the Gutenberg Galaxy. He prophesized that its narrative, one-dimensional structure of information would be swept away by the new electronic circuits of information, which were to create a boundless environment of instantaneous involvement between subjects.

Typically, Graham's own position did not follow this either/or logic. His work juxtaposes these various discursive models of symbolic logic in order to graph, as it were, the different subject relations, the different effects of power they contain. Graham also devised his own quasi-logical diagrams, which he entered into the spectrum that was bracketed in *Information* between Lull's *Ars Magna* and the semiotic systems of Lévi-Strauss. Graham's *Side Effect/Common Drug* (1966) and *Extended Distance/Extended Time* (1969) function "as gridded data fields generating an optical-matrix perspective. . . . The extension of the data field (in the time of the reading process) continues until all self-reflexive effects-points are optically cancelled."[52]



Opposite: Dan Graham. ***Extended Distance/Extended Time*, 1969.**

Above: Dan Graham. ***Side Effects/Common Drug*, 1966.**

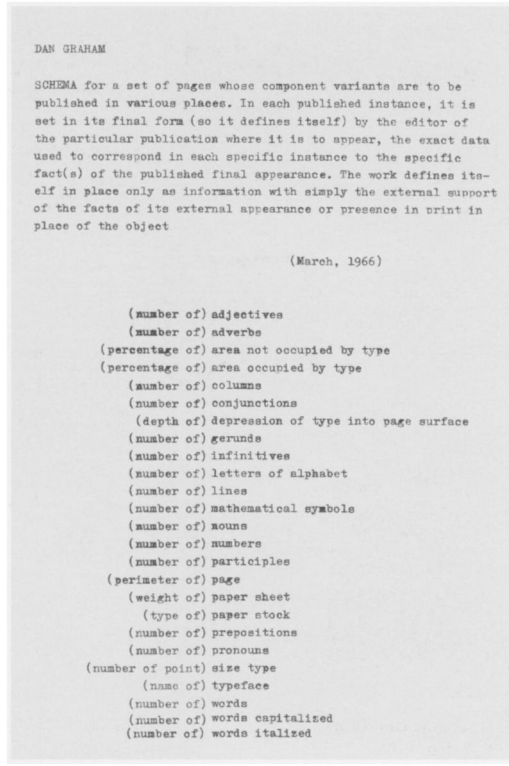
Graham's data grids can be said to operate on more than one level: they resemble both *algebraic* and *topological* structures.[53] Graham's graphs function, on the one hand, as logic diagrams that operate on a set of binary variables according to a combinatory rule. These otherwise senseless diagrams activate the viewer/reader, but they also perform an additional task: they subvert the self-enclosed autonomy of the minimalist grid, which is where topology comes into the picture. The data grids create confusion on various physical and semantic levels between the inner and outer boundaries of the work. The most literal example of this procedure is *Schema* (1966), which acquires a different content with each instance of publication, but *Homes for America* puts this topological principle to work on a somewhat grander scale.

Indeed, where the boundaries of *Homes for America* are located is hard to say. "It's art and it's science and it's the sociology of art (no history) or none of these definitions."[54] What this work presents is a kind of switchboard of information:

> Place in my article is decomposed into multiple and overlapping points of reference—mapped "points of interest"—in a two-dimensional point to point "grid." There is a "shell" present placed between the external "empty" material of place and the interior "empty" material of language; a complex, interlocking network of systems whose variants take place as information present (and) as (like) the medium—information—(in) itself.[55]

Graham refuses to think about the magazine, the place of his work, in terms of a static "architecture" of information. His topological notion of the "shell" disrupts the oppositional logic of container and contained, inside and outside, figure and ground. *Homes for America* thus shuttled back and forth between the metric space of the minimal or suburban grid, the perspectival space of photography, and the topological space of the information *network.* What unfolds within this cascading series of spatial dedifferentiation is the repressed unconscious of minimalism, its disavowal of (a) the new spaces of urbanism and (b) the new spaces of information.

The radical exposure in *Homes for America* of an isomorphic relation between minimalist structures and the new social landscape of the suburbs has been exhaustively discussed in the critical literature, and I do not wish to dwell on it. Nevertheless, it strikes me as remarkable that minimalism appears to be gripped by the



DAN GRAHAM

SCHEMA for a set of pages whose component variants are to be published in various places. In each published instance, it is set in its final form (so it defines itself) by the editor of the particular publication where it is to appear, the exact data used to correspond in each specific instance to the specific fact(s) of the published final appearance. The work defines itself in place only as information with simply the external support of the facts of its external appearance or presence in print in place of the object

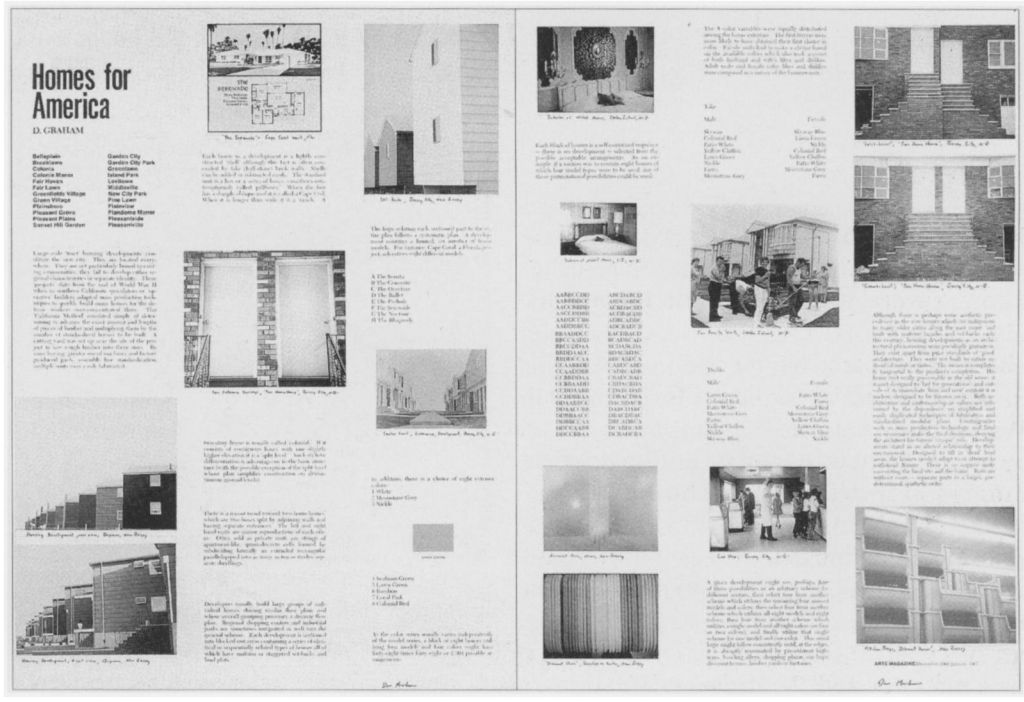
(March, 1966)

(number of) adjectives
(number of) adverbs
(percentage of) area not occupied by type
(percentage of) area occupied by type
(number of) columns
(number of) conjunctions
(depth of) depression of type into page surface
(number of) gerunds
(number of) infinitives
(number of) letters of alphabet
(number of) lines
(number of) mathematical symbols
(number of) nouns
(number of) numbers
(number of) participles
(perimeter of) page
(weight of) paper sheet
(type of) paper stock
(number of) prepositions
(number of) pronouns
(number of point) size type
(name of) typeface
(number of) words
(number of) words capitalized
(number of) words italized

same kind of "network fever" as the contemporary practice of architecture. As Mark Wigley has pointed out, several architects of the 1960s, such as Louis Kahn, Kenzo Tange, and Buckminster Fuller, became obsessed by the design of building systems that are similar to the grids of minimalism. Wigley explains this compulsion as an "attempt to make poetic images of the invisible communication infrastructure whose influence had grown throughout the century—a visible aesthetics, for the invisible net."[56]

My discussion keeps running up against these twin notions of the grid and the network. Yet wherein lies their difference? Grids are constituted by a modular and rectilinear geometry that defines and subdivides physical space, whereas networks are maintained by the dynamic relations between a multitude of nodes and exist in a continuous state of transformation and reconfiguration. In short, networks can only be described by a topology. Networks occupy a scaleless, nonmetric space—they are essentially invisible, as Wigley writes. Accordingly, networks are defined by a notion of *connectivity:* it is not the number of nodes that counts, but how they are connected.[57] With the same set of nodal points, one may construct different network topologies. If we arrange these network topologies according to a law of decreasing hierarchy, then we will move from a centralized to a decentralized and finally to a distributed type of network.

From grid to network, from logical diagram to logical machine, from an architecture of information to a topology of information. While this might appear to describe a linear mode of historical transition that is fashioned on the classificatory sequence "Euclidean-projective-topological geometry," which describes an increasingly nondifferentiated mode of spatiality, I have nothing so reductive in mind. By the later 1960s, such narratives of the evolution of a new information or "systems-aesthetics" art were already being marketed to a broad audience.[58] The magazine pieces of Graham, however, maintain an uneasy relationship to such narratives. His data grids delivered an effective critique of the gallery art of minimalism, but they were equally skeptical of an emancipatory politics that placed all its faith in technology or science. Graham's work reveals that the genealogy of the network is marked by a more uneven mode of development and more complex relations of power than most contemporary celebrations of the new technologies of information would allow. If McLuhan advocated a new



Opposite: Dan Graham. ***Schema*****, 1966.**

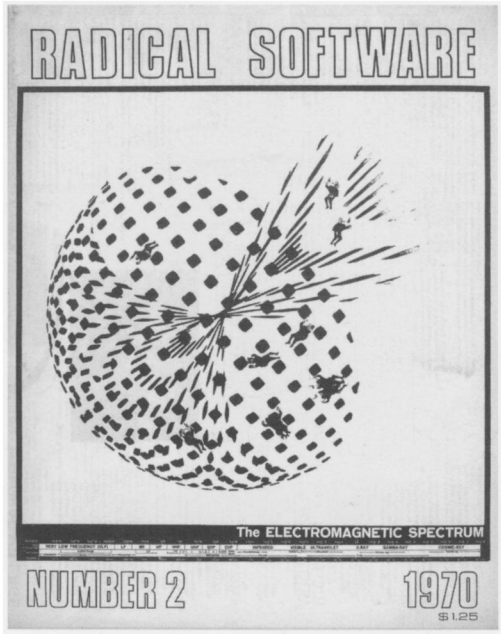
Above: Dan Graham. ***Homes for America*****, 1966–67.**

technology of politics, then Graham raised the more perplexing issue of a new politics of technology.

Unfreezing versus Control

Graham did not come to video making with the goal of assuming the professional identity of a "video artist." What attracted him to video technology was the social process of democratization, not specialization that emerged after the introduction of portable video equipment in the later 1960s. Most conventional histories of video art obscure the fact that by 1970 video was quickly becoming a ubiquitous medium of social interaction both inside and outside the gallery. By around this time, video had notably altered the teaching and research methods of psychologists, sociologists, and anthropologists. In particular, video feedback was embraced as a new communicative and pedagogical tool for classroom situations and encounter groups. Video feedback formed the backbone of the new scientific ideology of social life as a *continuous process of learning.* Feedback instituted and conditioned a collective process of consciousness-raising that was widely expected to have an ameliorative influence on society by challenging a person's belief system within a group setting. This process of disconfirming one's assumptions and relations with others was called *unfreezing*.[59]

A cybernetic model of the subject became almost mandatory within the overlapping milieus of behavioral psychology, communication theory, social activism, and artistic practice. One such interdisciplinary community of human scientists, video artists and media activists, was gathered around the magazine *Radical Software,* and Graham would become utterly fascinated by the heteroclite discourse produced within this coterie of 'videofreex.' *Radical Software* was launched in 1970 by the Raindance Corporation, an



Above: Front cover of *Radical Software* 1, no. 2 (Fall 1970).

Opposite, top: Paul Ryan. "Cybernetic Guerrilla Warfare," *Radical Software* 1, no. 3 (1971).

Opposite, bottom: Paul Ryan. "Cybernetic Guerrilla Warfare," *Radical Software* 1, no. 3 (1971). Detail of topological figures.

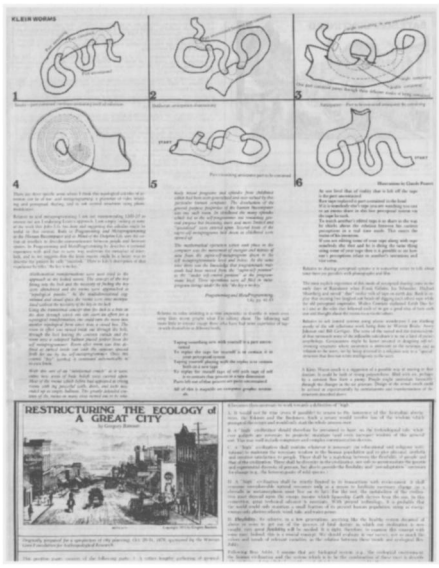
"alternative media think tank" that was founded by the artist Frank Gillette as a countercultural answer to the RAND Corporation, an institution for public policy research that advised the government and industry. *Radical Software* busied a highly eclectic jargon, mixing technical, psychological, and cybernetic terms, while its pages were interspersed with intricate diagrams and graphs. Most important, however, was the core belief of the *Radical Software* group in the biotechnical theory of media ecology. Drawing on the thought of Marshall McLuhan, Buckminster Fuller, and Gregory Bateson, *Radical Software* asserted that within an information society the notion of a transcendental self has ceased to exist; subjectivity, rather, has become fully integrated within the circuits of communication technology.

This argument of a prosthetic self who extends into the electronic circuits of the social clearly poses a political problem. If, to paraphrase Bateson, media ecology "recognizes that the self as ordinarily understood is only a small part of a much larger trial-and-error system which does the thinking, acting and deciding," then who or what is in command?[60] Bateson, and *Radical Software,* thought this problem would be resolved by providing the mediatized subject access to "all the informational pathways which are relevant at any given moment to any given decision." The centralized, unidirectional system of television broadcasting, therefore, became a prime target of the media ecologists. The members of Raindance and other video collectives gathered around *Radical Software* sought to construct their own decentralized networks by setting up alternative distribution and production systems in city neighborhoods, on cable television, and in the galleries. Armed with their Sony Porta-Pak video camera, these militants of cybernetic *guerrilla warfare* were to stage the first skirmishes on the battlefield, which was to expand into the Net wars of the 1990s.[61]

Of particular interest to Graham were the contributions of Paul Ryan, a former research assistant of McLuhan. Ryan was largely responsible for introducing the notion of topology within the pages of *Radical Software:*

> The moebius strip provides a model for dealing with the power videotape gives us to take in our own outside. . . . The moebius strip is a tactic for avoiding servo-mechanistic closure . . . one can learn to accept the extension out there on tape as part of self. There is the possibility of taking the extending back in and reprocessing over and again on one's personal time wrap.[62]


CYBERNETIC GUERRILLA WARFARE

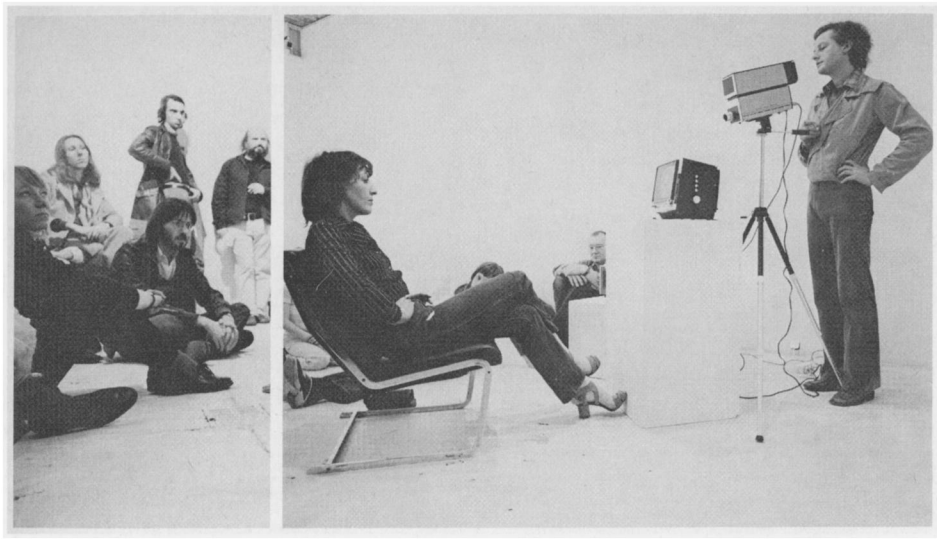

KLEIN WORMS

RESTRUCTURING THE ECOLOGY of A GREAT CITY

Ryan was convinced that the video loop provided the weapon to destroy all social hierarchies. He recommended, for instance, that students tape their teachers in order to incite their own cultural revolution. Yet, the politics of technology that emerged in *Radical Software* remained severely undertheorized. Its contributors mostly maintained a misty-eyed, psychedelic attitude toward social change, eschewing any Marxist analysis of the mediatized conditions of contemporary life. Ryan's phrase "Your strip is your trip" provides a good taste of the overall flavor of the writing in the magazine.[63]

Radical Software's authors thus remained largely oblivious to the more subtle social dynamics of control and command that, nevertheless, seeped into their language. More than one critic has drawn attention to the fact that cybernetics originated in the military context of control engineering during the Second World War and that the theory of feedback was developed in order to mathematically incorporate human beings into machinic systems and to forecast and correct their behavior.[64] Feedback may offer an effective model of self-management within groups, but the subjectifying mechanisms of power are not automatically canceled by its operations. Group dialogue may easily shade into group manipulation, as many encounter groups and political collectives were to discover during the 1970s.[65]

We may expect, then, that Graham was to exacerbate, rather than neutralize, this dialectic between control and dispersion in his own video installations and performances that deployed feedback. At first, Graham staged his exploration of the topological model of feedback in an informal manner by organizing performances during teaching assignments at various art schools. A good example is *Two Consciousness Projection(s)* (1972), which sets up a perceptual matrix of projections between three terms: a woman, who observes herself by means of a television monitor; a man, who observes the woman through the camera; and the surrounding audience. Each of these three elements functions as a feedback device for the others and thus potentially alters or governs their behavior. A dynamic field of perception is created in which the audience and the performers place, as Graham writes, "reciprocal controls on each other." Later video works, such as *Present Continuous Past(s)* (1974) are more formalized and deploy elaborate settings involving multiple chambers, mirrors, and video-delay loops. These installations follow a general strategy of causing a spatial and temporal division between, but also within, subjects.



Above: Dan Graham. *Two Consciousness Projection(s)*, 1972.

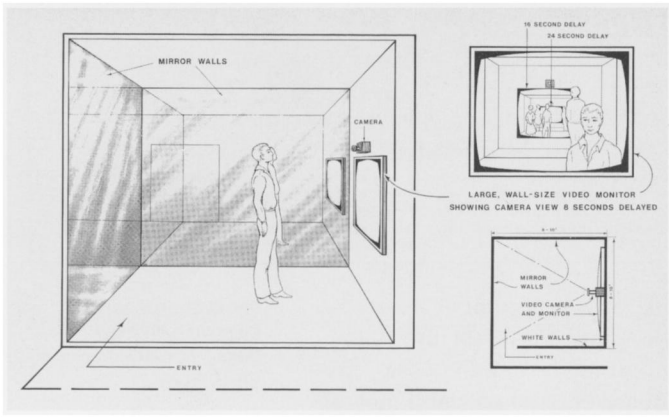
Opposite: Dan Graham. *Present Continuous Past(s)*, 1974.

Spatially, the installations and performances cause the participants to perceive themselves as both subject and object. The participants are divided between an intentional and a behavioral condition of being, while in a temporal sense their anticipatory horizon of consciousness collapses into a "the immediate present, without relation to past and hypothetical future states—a continuous topological or feedback loop forward or backward between just-past and immediate future."[66] Graham's perceptual machines create a chiasmic space in which the observer's self, like a Möbius strip, can be without an inside or an outside. And this radical deterritorialization of the subject does not return it to the "wild and brute being" of Merleau-Ponty's primordial, topological space. It comes with an admixture of pleasure and alienation, which should warn us that we are not only witnessing an infolding of selves but also are experiencing the interlocking structures of visual power.

For this reason, Graham's video installations have often been discussed in terms of a panoptical model of surveillance.[67] Yet, disciplinary power reigns across a striated space, a space of institutional confinement, and the incessant decentering and displacement of subjectivity in Graham's video installations belong to another dimensionality of space: one of envelopment, not enclosure.

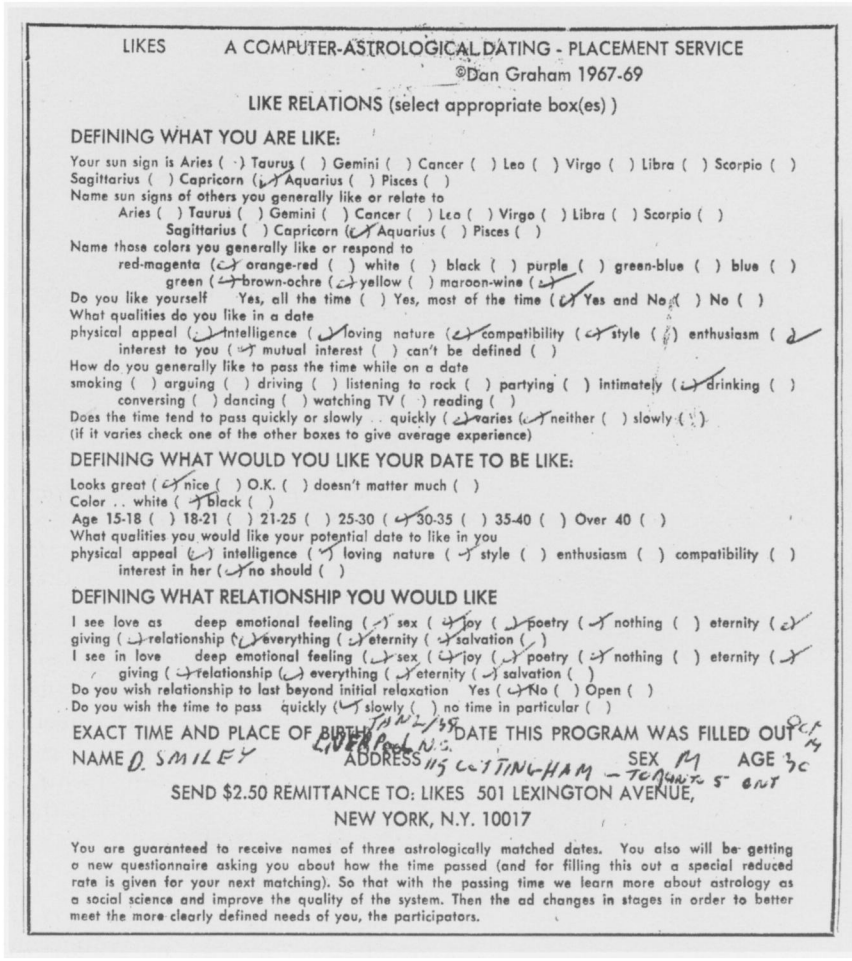
The society where a system of continuing education and continuous assessment rules is no longer a disciplinary but, to follow Deleuze, a control society.[68] Within a control society the subject is endlessly modulated and monitored, which creates an inexorable rivalry between subjects, dividing each within him- or herself. The control subject is a subject endlessly deprogrammed in order to be reprogrammed. Graham's feedback model anticipated what was to come, but it also retained a critical relation to itself. His video works remain suspended between centralized and distributed topologies of intersubjectivity.

According to Deleuze's historical scenario of the control society, our lived experience of time will approximate Graham's feedback structure of an "endlessly extendible present time in flux without a fixed future or past states." It follows that the question of histor-



ical memory becomes an ever more acute problem in our present, which is marked by an ever accelerating proliferation of network theories. I believe, therefore, that the words of Merleau-Ponty I applied to *This Way Brouwn* may be invoked again in relation to Graham's work: older than anything we encounter in the field of digital media, his video works remain very much of the first day. For those who wish to be instructed about the genealogy of the network, his works hold complex lessons indeed. But I don't have anything as reductive in mind as constructing a linear trajectory between postminimalism and more recent practices of new media art. I have attempted to show how topology operated on a discursive and a material level. A genealogy of topology is concerned with the changing modes of resistance and various mechanisms of control that are elicited within the networks of information at various moments and in various contexts. Such a genealogy will differ from a historical narrative of the inexorable progression of late capitalist society toward a disembodied, simulacral space of information—a narrative that has caused many expressions of anxiety within the realm of art history. Instead, I have opted to treat topology in a dialectical manner, just as the corresponding notion of "information" needs to be thought of as both "*immaterial and materializing, abstract and concrete, an act and a thing*."[69]

Once more, as in the case of Brouwn, the topological turn in postminimal art is not merely tied to a question of new technology—



LIKES A COMPUTER-ASTROLOGICAL DATING - PLACEMENT SERVICE

©Dan Graham 1967-69

LIKE RELATIONS (select appropriate box(es))

DEFINING WHAT YOU ARE LIKE:

Your sun sign is Aries ( ) Taurus ( ) Gemini ( ) Cancer ( ) Leo ( ) Virgo ( ) Libra ( ) Scorpio ( )
Sagittarius ( ) Capricorn ( ) Aquarius ( ) Pisces ( )
Name sun signs of others you generally like or relate to
Aries ( ) Taurus ( ) Gemini ( ) Cancer ( ) Leo ( ) Virgo ( ) Libra ( ) Scorpio ( )
Sagittarius ( ) Capricorn ( ) Aquarius ( ) Pisces ( )
Name those colors you generally like or respond to
red-magenta ( ) orange-red ( ) white ( ) black ( ) purple ( ) green-blue ( ) blue ( )
green ( ) brown-ochre ( ) yellow ( ) maroon-wine ( )
Do you like yourself Yes, all the time ( ) Yes, most of the time ( ) Yes and No ( ) No ( )
What qualities do you like in a date
physical appeal ( ) intelligence ( ) loving nature ( ) compatibility ( ) style ( ) enthusiasm ( )
interest to you ( ) mutual interest ( ) can't be defined ( )
How do you generally like to pass the time while on a date
smoking ( ) arguing ( ) driving ( ) listening to rock ( ) partying ( ) intimately ( ) drinking ( )
conversing ( ) dancing ( ) watching TV ( ) reading ( )
Does the time tend to pass quickly or slowly . . quickly ( ) varies ( ) neither ( ) slowly ( )
(if it varies check one of the other boxes to give average experience)

DEFINING WHAT WOULD YOU LIKE YOUR DATE TO BE LIKE:

Looks great ( ) nice ( ) O.K. ( ) doesn't matter much ( )
Color . . white ( ) black ( )
Age 15-18 ( ) 18-21 ( ) 21-25 ( ) 25-30 ( ) 30-35 ( ) 35-40 ( ) Over 40 ( )
What qualities you would like your potential date to like in you
physical appeal ( ) intelligence ( ) loving nature ( ) style ( ) enthusiasm ( ) compatibility ( )
interest in her ( ) no should ( )

DEFINING WHAT RELATIONSHIP YOU WOULD LIKE

I see love as deep emotional feeling ( ) sex ( ) joy ( ) poetry ( ) nothing ( ) eternity ( )
giving ( ) relationship ( ) everything ( ) eternity ( ) salvation ( )
I see in love deep emotional feeling ( ) sex ( ) joy ( ) poetry ( ) nothing ( ) eternity ( )
giving ( ) relationship ( ) everything ( ) eternity ( ) salvation ( )
Do you wish relationship to last beyond initial relaxation Yes ( ) No ( ) Open ( )
Do you wish the time to pass quickly ( ) slowly ( ) no time in particular ( )

EXACT TIME AND PLACE OF BIRTH JAN 2/35 DATE THIS PROGRAM WAS FILLED OUT Oct 69
NAME D. SMILEY ADDRESS 115 CUTTINGHAM SEX M AGE 34

SEND $2.50 REMITTANCE TO: LIKES 501 LEXINGTON AVENUE,
NEW YORK, N.Y. 10017

You are guaranteed to receive names of three astrologically matched dates. You also will be getting a new questionnaire asking you about how the time passed (and for filling this out a special reduced rate is given for your next matching). So that with the passing time we learn more about astrology as a social science and improve the quality of the system. Then the ad changes in stages in order to better meet the more clearly defined needs of you, the participators.

Dan Graham. *Likes (A Computer-Astrological Dating–Placement Service)*, 1967–68.

even if the computer shows up now and again in Graham's work. In 1967, for instance, he developed a plan for "A Computer-Astrological Dating-Placement Service," which he called *Likes*. The project involved recruiting a pool of subscribers who established a digital "profile" by listing their likes and dislikes. By running a statistical algorithm, a computer could then determine which members in this pool formed a perfect match. Had *Likes* become operable in 1967, Graham would have created the perfect informatized "model" of a self-regulating social system organized by a feedback principle. Today *Likes* would no longer be an oddity. Graham's idea has become a well-established technique of social management called "collaborative filtering," which, as Alexander Galloway points out, updates the mechanisms of interpellation for the digital age.[70] But Graham was not addressing the protocols of our current digital network. What he intimated was the strategic necessity of confronting an emergent biopolitics of information: to explore not only how one is incorporated within the topologies of control but also how one might construct alternative topologies of the social.

Notes

An earlier version of this essay was presented at the symposium *Verkehrte Symmetrien: Zur Topologischen Imagination in Kunst und Theorie* organized by Ralph Ubl and Wolfram Pichler at the Museum Moderner Kunst in Vienna on 21–22 October 2005.

1. Nauman's latex rubber objects stem from the period 1965–1966 but were exhibited in New York at Leo Castelli Gallery in 1968, where Graham would have seen them. Besides the floor piece described by Graham, Nauman also made wall pieces of the same material.

2. Dan Graham, "Subject Matter," in Dan Graham, *Rock My Religion: Writings and Art Projects, 1965–1990,* ed. Brian Wallis (Cambridge: MIT Press, 1993), 42. This essay was first published in Dan Graham, *End Moments* (New York: n.p., 1969). As far as I'm aware, this passage is the first time Graham uses the term *topology.*

3. The text also demonstrates Graham's interest in experimental music. Steve Reich's *Pendulum Music* is extensively discussed in one section of the essay.

4. Graham attributes this phrase to Karlheinz Stockhausen. Not surprisingly, "Subject Matter" was initiated as a study of so-called ecological art. The experimentations of the *Nouveaux Roman* with the authorial perspective also exerted their influence on this text. "Subject Matter" begins with a quotation by Alain Robbe-Grillet: "Objects will be there before being something; and they will be there afterwards, hard, unalterable, eternally present, mocking their own meaning." Graham associates this conception of the object as "unalterable" with minimalism. Postminimalism, on the other hand, places the object back in time.

5. As we will see, Graham was also familiar with Marshall McLuhan's argument that the omnidirectional, boundless qualities of auditory space constituted a topological model of the new "tribal" space of the electronic media of information.

6. Graham, "Subject Matter," 50.

7. The notion of a smooth space in contrast to a striated space is propounded by Gilles Deleuze and Felix Guattari in *A Thousand Plateaus: Capitalism and Schizophrenia,* trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1987). Although the terms are not strictly synonymous, for my purposes a Deleuzian smooth (or rhizomatic) space can be considered to be homeomorphic with a topological space. Striated space, on the other hand, is related to Euclidean space in being defined by an extensive, quantitative, and metrical mode of geometry. Striated or stratified space forms a territory that is "counted in order to be occupied." The advantage of this Deleuzian vocabulary of smooth versus striated space is to introduce the issue of historical periodization into my argument. Furthermore, this vocabulary connects with Michel Foucault's conception of the spatializing effects of the changing, historical strategies of power.

8. I shall not delve into Graham's conception of artistic practice as a "model" at great length, but it is derived from, among other places, the mathematical "modeling" of cultural systems in structuralism and the practical role of the "model" in minimalist and architectural practice. On the latter, see Graham's "Models and Monuments: The Plague of Architecture," *Arts Magazine* 41, no. 5 (March 1967): 32–35.

9. Elsewhere I have discussed the topological structure of Graham's films. I shall not return to this topic in full here, but my discussion of Graham's magazine pieces draws in part on my earlier essay. See "The Filmic Topology of Dan Graham," in *Dan Graham: Works, 1965–2000*, ed. Marianne Brouwer and Rhea Anastas (Düsseldorf, Germany: Richter Verlag, 2001): 329–354.

10. "Dan Graham Interviewed by Eric de Bruyn," *Two-Way Mirror Power: Selected Writings by Dan Graham on His Art,* ed. Alexander Alberro (Cambridge: MIT Press, 1999), 115.

11. And not without some skepticism from the side of the "exact" sciences, as Claude Lévi-Strauss reports in "Les mathémathiques de l'homme," *Esprit* 24 (1956): 525–538.

12. *The Columbia Encyclopedia,* 6th ed. (New York: Columbia University Press, 2001–2005). The mathematical field of topology consists in fact of several subdisciplines: point-set topology, combinatorial topology, algebraic topology, and differential topology.

13. Deleuze and Guattari cite the expression without providing a source: "a heterogeneous smooth space . . . can 'be explored only by legwork.'" Deleuze and Guattari, *A Thousand Plateaus,* 371.

14. I present only one out of many possible genealogies of a topological art practice. Another genealogy may be traced, for instance, through the link between the European Concrete art movement (Max Bill) and the Neo-Concrete movement in Brazil (Lygia Clark). Hubert Damisch develops yet another genealogy within the realm of painting in his "La peinture est un vrai trois," in Hubert Damisch, *Fenêtre jaune cadmium ou les dessous de la peinture* (Paris: Seuil, 1984), 275–305. See also Wolfram Pichler and Ralph Ubl, "Enden und Falten: Geschichte der Malerei als Oberfläche," *Die neue Rundschau* 113, no. 4 (2002): 50–71.

15. Michel Foucault, *The History of Sexuality, Volume 1: An Introduction* (New York: Pantheon Books, 1978), 96.

16. The dating of the drawings is unclear. Ludo van Halem has claimed that the earliest *This Way Brouwn* drawings probably stem from the end of 1963. However, Stanley Brouwn, *This Way Brouwn 25-2-61/26-2-61: Zeichnungen 1* (Cologne, Germany: König Verlag, 1971) dates some drawings to 1961. At the 1976 retrospective at the Van Abbemuseum even 1960 was listed. Ludo van Halem "Elementaire Belevenissen: Het vroege werk van Stanley Brouwn," *Jong Holland* 7, no. 3 (1991): 10–25.

17. Kees Schippers, "Stanley Brouwn: This Way Brouwn," in *Een cheque voor de tandarts,* ed. Jan Bernlef and Kees Schippers (Amsterdam: Querido, 1967), 172.

18. The roots of Brouwn's work in the neo-avant-garde environment of the Zero, Fluxus, and Nouveaux Réalisme movements have been noted by most of his critics. During the early 1960s Brouwn performed several actions in public space. He also developed various ready-made strategies for the production of salable objects. A key example of the latter is *Measured Object* (*Gemeten Object*) of 1964: a dustpan that is inscribed with its own metrical dimensions. It's possible, therefore, to view Brouwn's later work as relying on the two contrasting principles of movement (i.e., *This Way Brouwn*) and measurement (i.e., *Measured Object*) already present in 1964. Yet, even though Brouwn underwrites such a perspective, it tends to reduce the complexity of the original historical context of these works. Furthermore, such a perspective is not sufficient to identify the dual principles of movement and measurement as the main, unifying thread within the work. Rather, the shifting, dialectical relationship between these two principles forms its actual problem.

19. Since 1972 Brouwn has added the following provision to his museum catalogues: "At the request of the artist there are no photos or bio-bibliographical data."

20. On the early work of Brouwn, see Van Halem, who notes that at the time of Brouwn's retrospective at the Van Abbemuseum in 1976, Brouwn decided to strike all his pre-1971 work from the historical record, which could not be related to the

This Way Brouwn project.

21. Stanley Brouwn, *Steps* (Amsterdam: Stedelijk Museum, 1971).

22. Benjamin Buchloh, "Conceptual Art 1962–1969: From the Aesthetics of Administration to the Critique of Institutions," *October* 55 (Winter 1990): 105–143. Buchloh does not address Brouwn's work in this essay.

23. Van Halem, 224–225, n. 66.

24. See, for instance, the comments to this effect in Edward Kasner and James Newman, *Mathematics and the Imagination* (New York: Simon Schuster, 1940).

25. Kasner and Newman, 272–273.

26. Stanley Brouwn, "This Way Brouwn," in *Randstad,* no. 11–12 (1966): 166. The text first appeared in German translation in Jürgen Becker and Wolf Vostell, ed., *Happenings: Fluxus, Pop Art, Nouveau Réalisme: Eine Dokumentation* (Reinbeck bei Hamburg: Rowohlt, 1965). I have slightly adapted the English translation that was printed in Brouwn, *Zeichnungen 1.*

27. Brouwn, *Zeichnungen.*

28. Brouwn, *Zeichnungen.*

29. Merleau-Ponty reverses the well-known argument of Jean Piaget that the maturation of human perception goes through a number of stages leading from a topological to a Euclidean comprehension of space: "the perceptual in the sense of the non-projective, vertical world—is always given with sense experience (le sentir), with the phenomenal, with the silent transcendence. And yet someone like Piaget ignores this absolutely, has totally converted his perception into a cultural, Euclidean perception." Maurice Merleau-Ponty, *The Visible and the Invisible,* ed. Claude Lefort, trans. Alphonso Lingis (Evanston, IL: Northwestern University Press, 1968), 213.

30. Merleau-Ponty, 224.

31. Merleau-Ponty, 210.

32. See, for instance, the following entry from "October 1959": "Take topological space as a model of being. The Euclidean space is the model for perspectival being, it is a space without transcendence, positive, a network of straight lines. . . . The topological space, on the contrary, a milieu in which are circumscribed relations of proximity, of envelopment, etc." Merleau-Ponty, 210.

33. Stanley Brouwn and Kees Schippers, "Uit This Way Brouwn texten en gesprekken met Stanley Brouwn," in *Een cheque voor de tandarts,* ed. Bernlef and Schippers, 174.

34. Stanley Brouwn, "4,000 A.D." [1964], in *Een cheque voor de tandarts,* ed. Bernlef and Schippers, 172.

35. Johannes Cladders, "Stanley Brouwn: 'Door kosmische stralen lopen,'" *Museumjournaal* 16, no. 3 (1971): 135–138.

36. Louis Althusser, "Ideology and Ideological State Apparatus," *Lenin and Philosophy and Other Essays,* trans. Ben Brewster (London: New Left Books, 1977).

37. Brouwn, *Zeichnungen.*

38. Brouwn, *Zeichnungen.*

39. Brouwn, "This Way Brouwn," 167, 169.

40. Brouwn, "This Way Brouwn," 169.

41. I do not subscribe to a "Deleuzian" view of *This Way Brouwn,* which would place a one-sided emphasis on the "nomadic" axis of the work. We need to pay attention to the manner in which the work articulates the interval between striated and smooth spaces: therein lays its historical significance. An inconclusive stab at a Deleuzian reading is made by Philip Monk, "Stanley Brouwn and the Zero Machine," *Parachute* no. 18 (Spring 1980): 18–20.

42. Fredric Jameson, *Postmodernism, or The Cultural Logic of Late Capitalism* (Durham, NC: Duke University Press, 1991).

43. The proposal for *Phone Drawings* can be found in *Dé-coll/age: Bulletin aktueller Ideeen und Kunst nach 1960* 4 (January 1964): n.p. The computer project is printed in Stanley Brouwn, *100 This-Way-Brouwn-Problems for Computer I.B.M. 360 Model 95* (Cologne, Germany: Verlag Gebr. König, 1970). The book contains a series of computer commands based on the formula "show brouwn the way from each point on a circle with x as centre and a radius of n angström to all other points" with the value of n ranging from 1 to 100. The solution is impossible to compute. The IBM 360 model 95 was designed for NASA in 1968 and was intended to handle "space exploration problems which require unusually high computation speeds." See the IBM website at http://www-03.ibm.com/ibm/history/exhibits/mainframe/mainframe_PP2095.html.

44. Brouwn presents a fragmentary description of this action in Stanley Brouwn, "This Way Brouwn in Berlijn," in *Fluxus, The Most Radical and Experimental Art Movement of the Sixties*, ed. Harry Ruhé (Amsterdam: A, 1979), n.p.

45. Mel Bochner, presentation ("Robert Smithson Symposium," Whitney Museum, New York, 24 September 2005).

46. "Conceptual art doesn't really have much to do with mathematics, philosophy, or any other mental discipline. . . . [I]t is not an illustration of any system of philosophy." Sol LeWitt, "Paragraphs on Conceptual Art" (1967), in *Conceptual Art: A Critical Anthology*, ed. Alexander Alberro and Blake Stimson (Cambridge: MIT Press, 1999), 14.

47. Dan Graham has published "Information" in different forms. The earliest appearance is in *End Moments*. It was republished in a shortened version in Dan Graham, *For Publication* (Los Angeles: Otis Art Institute, 1975) and again in *Rock My Religion*.

48. Dan Graham, "Information," in *Rock My Religion*, ed. Brian Wallis, 30. Graham credits Lévi-Strauss in the text but does not give the source of his quotation.

49. The material on Lull presumably stems from Martin Gardner, *Logic Machines, Diagrams, and Boolean Algebra* (New York: Dover, 1968).

50. "Dan Graham Interviewed by Eric de Bruyn," 114.

51. Graham, "Information," 27.

52. Graham's data grids derive from such minimalist grids as Sol LeWitt's *Serial Project No. 1 (ABCD)*, which was first published in *Aspen Magazine* in 1966.

53. See Marc Babut, "On the Meaning of the Word 'Structure' in Mathematics," in *Introduction to Structuralism*, ed. Michael Lane, 367–388 (New York: Basic Books, 1970).

54. Dan Graham, "*Aspen:* One Proposal," in *Rock My Religion*, ed. Brian Wallis, 40.

55. Graham, "Photographs of Motion," in Graham, *End Moments*, 34.

56. Mark Wigley, "Network Fever," *Grey Room* 4 (Summer 2001): 111.

57. See Paul Baran, *On Distributed Communications: 1. Introduction to Distributed Communications Networks* (Santa Monica, CA: RAND, 1964); and Alexander Galloway and Eugene Thacker, "Protocol, Control, Networks," *Grey Room* 17 (Fall 2004): 7–29.

58. Pamela M. Lee, "'Ultramoderne': Or, How George Kubler Stole the Time in Sixties Art," *Grey Room* 2 (Winter 2001): 46–77.

59. *Unfreezing* was widely used within group psychology during the 1960s. One possible source of the term was the dynamic or "topological" psychology of Kurt Lewin (1890–1947), whose work had a direct impact on the development of "action research" and encounter groups in the 1960s. See http://www.infed.org/

thinkers/et-lewin.htm. In a text from 1947, Lewin defines *unfreezing* as the breaking of a social habit or a custom. Unfreezing is thus associated by Lewin with a progressive momentum of social change whereby a "quasi-stationary equilibrium" is overcome by an alteration within the total social "force field." See Kurt Lewin, "Frontiers in Group Dynamics," in *Field Theory in Social Science,* ed. Dorwin Cartwright (New York: Harper and Row, 1951), 224. Lewin is best known for his development of topological models of the "lifespace" of individuals and groups. Graham's mother apparently studied with Lewin, and the artist has often cited him as a source for his work. A helpful oversight of Lewin's contribution to group psychology can be found at http://www.infed.org/thinkers/et-lewin.htm.

60. Gregory Bateson, "The Cybernetics of 'Self': A Theory of Alcoholism," in Gregory Bateson, *Steps to an Ecology of Mind* (Chicago: University of Chicago Press, 1972), 331.

61. See John Arquilla and David Ronfeldt, *Networks and Netwars: The Future of Terror, Crime, and Militancy* (Santa Monica, CA: RAND, 2001).

62. Paul Ryan, "Self-Processing," in Paul Ryan, *Birth and Death and Cybernation: The Cybernetics of the Sacred* (New York: Gordon and Breach, 1973), 32, 35. This essay was originally published in *Radical Software* 1, no. 2 (Fall 1970): 15.

63. Ryan, 32. As his book title demonstrates, Ryan took a "sacral" perspective on social change. He expected the cybernetic process of infolding to establish a "tribal," self-regulating community in which the individual dissolves into a greater unity. Ryan, who had previously lived in a monastery, would have known Bateson's "The Cybernetics of 'Self,'" which demonstrated a "theological" dimension of cybernetic theory. Bateson argued in relation to the example of Alcoholics Anonymous how a social feedback system causes the self to recognize its part in a "larger field of interlocking processes." As a result, the self comes to realize that "there is a power greater than the self" and that this power is intimately linked with each person. This power, Bateson writes, is *God* as the individual understand him. Bateson, 331–332.

64. Peter Galison, "The Ontology of the Enemy: Norbert Weiner and the Cybernetic Vision," *Critical Inquiry* 21 (Autumn 1994): 228–266.

65. Dan Graham locates his own performances in relation to this historical context of encounter groups and "face-to-face community 'consciousness raising'" in Dan Graham, "Performance: End of the '60s," in *Two-Way Mirror Power,* ed. Alexander Alberro, 142–144.

66. Dan Graham, "Essay on Video, Architecture and Television," in *Video Architecture Television: Writings on Video and Video Works*, ed. Benjamin H. D. Buchloh (Halifax: Nova Scotia College of Art and Design, 1979), 69.

67. Thierry de Duve, "Dan Graham and the Critique of Artistic Autonomy," in *Dan Graham*, ed. Brouwer and Anastas, 49–66.

68. Gilles Deleuze, "Postscript on Control Societies," in Gilles Deleuze, *Negotiations* (New York: Columbia University Press, 1995), 177–182.

69. Galloway and Thacker, 20.

70. Alexander Galloway, *Protocol: How Control Exists after Decentralization* (Cambridge: MIT Press, 2004), 114.